

**HOLD DOWN SYSTEM USING CALIBRATED
COMPRESSION**

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PRODUCT DESCRIPTION

Why invent a new hold down system? Because of two primary reasons. The existing systems are LABOR intensive and the use of WOODEN MEMBERS presents definite liabilities.

LABOR:

The existing systems are labor intensive due to the fact that they are awkward to install. Usually they are installed after the building is framed. Thus, you are working around an existing wooden framed building that was not laid out with hold-downs as a primary concern. The framework requires drilling holes in unusual places, at right angles in narrow spaces, at corners, interior and exterior, that are made up of members of unusual dimensions. Drilling accurate holes parallel to floors and ceilings is not the easiest thing to do. Many times reframing is required to either add or remove vertical supports.

This system was designed as a user-friendly device and involves a minimum of drilling and assembling of components.

1. It involves as few holes to be drilled as possible.
2. It does not depend on pre-existing vertical wooden members.
3. It can be installed with unskilled labor.
4. The number of parts are minimal.
5. All parts are interchangeable.
6. Labor savings on installation is 50% less than using existing system.
7. Only three holes are needed to hold down a two-story structure.
8. Only standard building trade tools are required to assemble the system.
9. Special sizes of co-dependent vertical members are not required.
10. There can be an element of error with the vertical alignment of drilled holes without undue hardship to the system or installers.

Today's system consists of bolting of vertical wooden members of a structure together with the use of metal brackets, nuts and bolts, and attaching this assembly to the foundation.

A newly installed assembly will perform as designed until the effects of aging take place on its wooden members - shrinkage, drying, brittle, deterioration, etc. The effects of this process cause loosening of its assemblies, thus the loss of structural characteristics that it was designed for.

Today's system requires special framework design - this system does not. The existing systems are awkward to install and thus excessively time consuming.

The invention consists of a machine that will anchor the wooden members of the structure to the foundation. It will allow future forces to be applied for the life of the building to compensate for shrinkage. Also, all interior assemblies will remain tight throughout the life of the building.

PHOTOGRAPHS OF EXPERIMENTAL INSTALLATION.



COMPLETE ASSEMBLY



TYPICAL CEILING INSTALLATION



TYPICAL FLOOR INSTALLATION

SCOPING PLATE



FOUNDATION CONNECTION



FLOOR TO CEILING INSTALLATION



PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (b)(2).

Docket Number		Type a plus sign (+) inside this box →	
INVENTOR(s)			
Last Name	First Name	Middle Initial	Residence (City and either State or Foreign Country)
HARRIS	GARY	R.	5401 Broadway Terrace Apt # 304 Oakland California 94618
<input type="checkbox"/> Additional inventors are being named on separately numbered sheets attached hereto			
TITLE OF THE INVENTION			
Hold Down Using Calibrated Compression			
CORRESPONDENCE ADDRESS (including country if not United States)			
5401 Broadway Terrace Apt. # 304 Oakland California U.S.A. 94618			
ENCLOSED APPLICATION PARTS (check all that apply)			
<input checked="" type="checkbox"/> Specification	Number of Pages	<input checked="" type="checkbox"/> Small Entity Statement	
<input checked="" type="checkbox"/> Drawing(s)	Number of Sheets	<input type="checkbox"/> Other (specify)	
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)			
<input checked="" type="checkbox"/> A check or money order is enclosed to cover the filing fees		FILING FEE AMOUNT (\$)	
<input type="checkbox"/> The Commissioner is hereby authorized to charge filing fees and credit Deposit Account Number:			
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.			
<input checked="" type="checkbox"/> No.			
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are:			

Respectfully submitted,

SIGNATURE

Gary R Harris

Date

5/27/97

TYPED or PRINTED NAME

GARY R HARRIS

REGISTRATION NO.

(if appropriate)

TELEPHONE NUMBER

510-547-5543

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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FEE TRANSMITTAL

TOTAL AMOUNT OF PAYMENT

(\$)

75.00

Application Number

Filing Date

5/27/97

First Named Inventor

GARY R. HARRIS

Group Art Unit

Examiner Name

Attorney Docket Number

METHOD OF PAYMENT (check one)

- 1.
- ☐
- The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit
Account
NumberDeposit
Account
Name☐ Charge Any Additional
Fee Required Under 37
CFR 1.16 and 1.17☐ Charge the Issue Fee Set in 37
CFR 1.18 at the Mailing of the
Notice of Allowance, 37 CFR
1.311(b)

- 2.
- ☐
- Payment Enclosed:

☐ Check☒ Money
Order☐ Other

FEE CALCULATION (fees effective 10/01/95)

1. FILING FEE

Large Entry Fee Code (\$)	Small Entry Fee Code (\$)	Fee Description	Fee Paid
101 750	201 375	Utility filing fee	
106 310	206 155	Design filing fee	
107 510	207 255	Plant filing fee	
108 750	208 375	Reissue filing fee	
114 150	214 75	Provisional filing fee	75.00

SUBTOTAL (1) (\$)

75.00

2. CLAIMS

Total Claims	Extra	Fee from below	Fee Paid
4 - 20 =	0	0	0
Independent Claims - 3 =	0	0	0
Multiple Dependent Claims	0	0	0

Large Entry Fee Code (\$)	Small Entry Fee Code (\$)	Fee Description
103 22	203 11	Claims in excess of 20
102 78	202 39	Independent claims in excess of 3
104 250	204 125	Multiple dependent claim
109 78	209 39	Reissue independent claims over original patent
110 22	210 11	Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)

0

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entry Fee Code (\$)	Small Entry Fee Code (\$)	Fee Description	Fee Paid
105 130	205 65	Surcharge - late filing fee or oath	
127 50	227 25	Surcharge - late provisional filing fee or cover sheet	
139 130	139 130	Non-English specification	
147 2,390	147 2,390	For filing a request for reexamination	
112 870	112 870	Requesting publication of SIR prior to Examiner action	
113 1,740	113 1,740	Requesting publication of SIR after Examiner action	
115 110	215 55	Extension for response within first month	
118 380	218 190	Extension for response within second month	
117 900	217 450	Extension for response within third month	
118 1,400	218 700	Extension for response within fourth month	
119 290	219 145	Notice of Appeal	
120 290	220 145	Filing a brief in support of an appeal	
121 250	221 125	Request for oral hearing	
138 1,430	138 1,430	Petition to institute a public use proceeding	
140 110	240 55	Petition to revive unavoidably abandoned application	
141 1,250	241 625	Petition to revive unintentionally abandoned application	
142 1,250	242 625	Utility issue fee (or reissue)	
143 430	243 215	Design issue fee	
144 630	244 315	Plant issue fee	
122 130	122 130	Petitions to the Commissioner	
123 50	123 50	Petitions related to provisional applications	
128 220	128 220	Submission of Information Disclosure Stmt	
581 40	581 40	Recording each patent assignment per property (times number of properties)	
146 750	246 375	Filing a submission after final rejection (37 CFR 1.129(a))	
149 750	249 375	For each additional invention to be examined (37 CFR 1.129(b))	

Other fee (specify) _____

Other fee (specify) _____

SUBTOTAL (3) (\$)

0

* Reduced by Basic Filing Fee Paid

SUBMITTED BY

Typed or
Printed Name

GARY R. HARRIS

Complete (if applicable)

Reg. Number

Signature

Gary R. Harris

Date

5/27/97

Deposit Account
User ID

**VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(b))--INDEPENDENT INVENTOR**

Docket Number (Optional)

Applicant or Patentee: GARY R. HARRIS

Application or Patent No.: _____

Filed or Issued: 5/27/97

Title: Held Down Using Calibrated Compression

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

- ☒ the specification filed herewith with title as listed above.
☒ the application identified above.
☒ the patent identified above.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ No such person, concern, or organization exists.
☐ Each such person, concern or organization is listed below.

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

GARY R. HARRIS
NAME OF INVENTOR

Gary R. Harris
Signature of inventor

Date 5/27/97

NAME OF INVENTOR

Signature of inventor

Date

NAME OF INVENTOR

Signature of inventor

Date

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A newly installed assembly will perform as designed until the effects of aging take place on its wooden members - shrinkage, drying, brittle, deterioration, etc. The effects of this process cause loosening of its assemblies, thus the loss of structural characteristics that it was designed for.

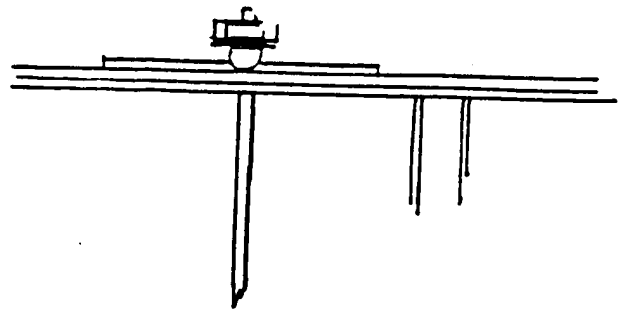
Today's system requires special framework design - this system does not. The existing systems are awkward to install and thus excessively time consuming.

The invention consists of a machine that will anchor the wooden members of the structure to the foundation. It will allow future forces to be applied for the life of the building to compensate for shrinkage. Also, all interior assemblies will remain tight throughout the life of the building.

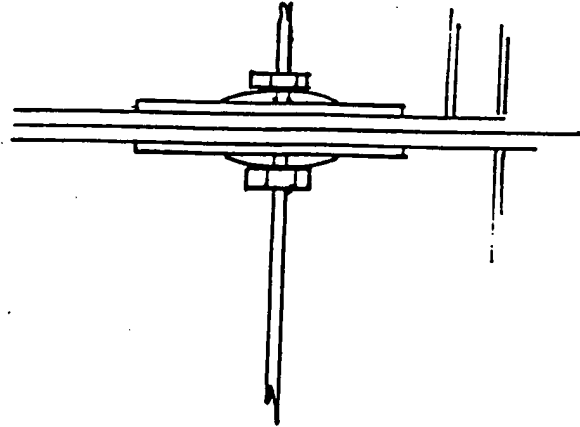
CLAIMS

1. A device that will hold the individual floors together and keep them under pressure for long periods of time.
2. A single continuous device that will hold each vertical assembly together and subject the structure to a constant downward force.
3. The ability to monitor the downward pressure at all times.
4. The ability to calibrate all interior pressures within the assembly so as to allow for future motion within the structure.

Nut
Compression Washer
Rounded Washer or Nut
Backing Plate
Double Plate
Threaded Rod

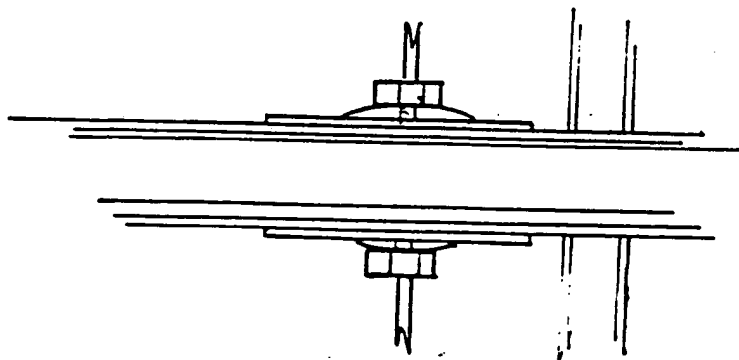


Nut
Compression Washer
Backing Plate
Double Plates
Backing Plate
Compression Washer
Nut



Threaded Rod

Nut
Compression Washer
Backing Plate
Floor Joist-Mid Floor Cross-Section
Backing Plate
Compression Washer
Nut



Coupling Nut

Tension Indicator

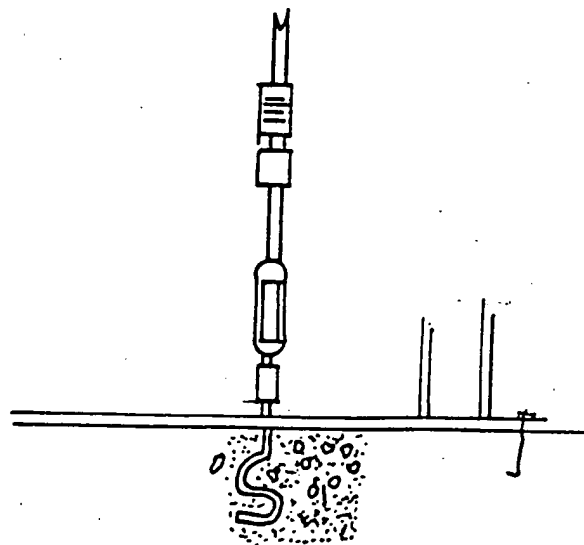
Turn Buckle

Coupling Nut

Mud Sill

Anchor Bolt

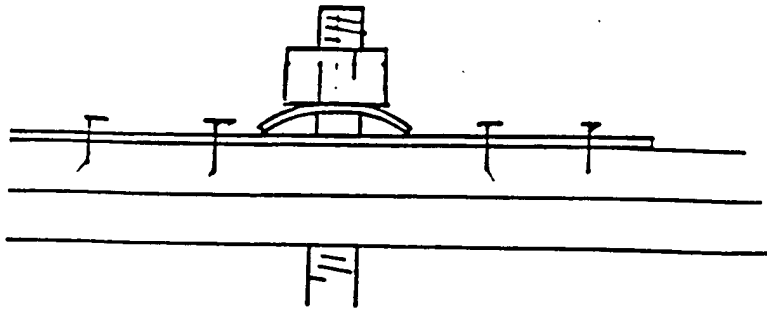
Foundation



Pre-drilled Holes

Nut
Compression Washer
Backing Plate

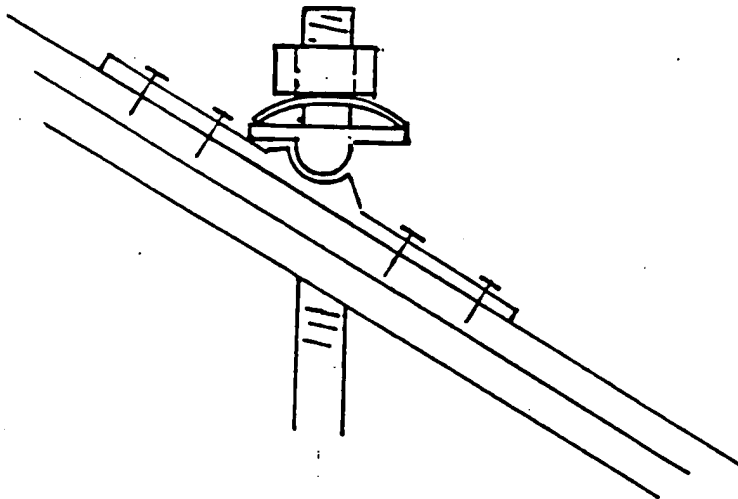
Threaded Rod



SLOPING TOP PLATE

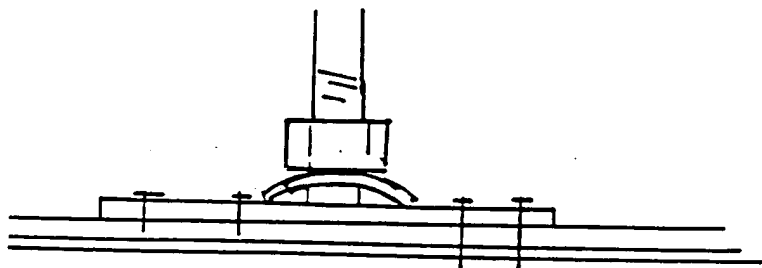
Nut
Compression Washer
Rounded Washer or Nut
Cup in Backing Plate

Threaded Rod



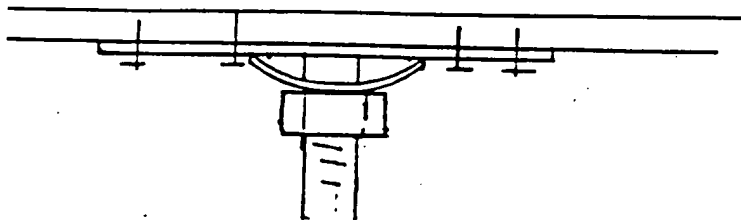
ID FLOOR CROSS SECTION

Nut
Compression Plate
Backing Plate



Backing Plate
Compression Washer
Nut

Threaded Rod



~~INSPECTION GAUGE~~

VISIBLE GAUGE

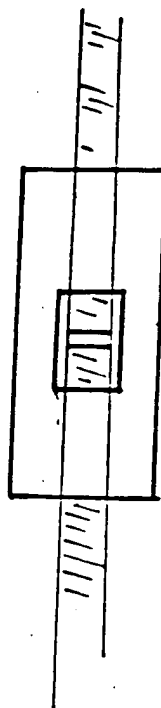
THREADED ROD

TURN BUCKLE

POSSIBLE VIEW VENT



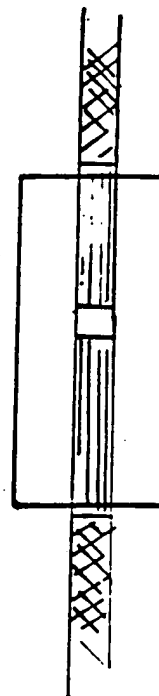
COUPLING



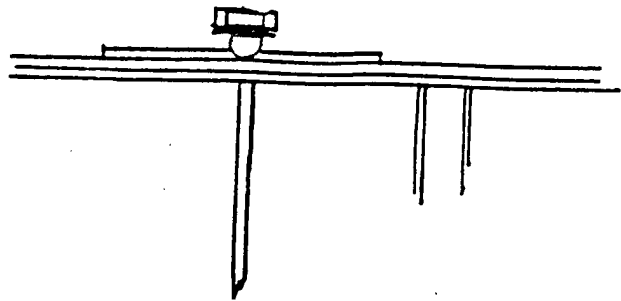
INSPECTION HOLE

THREADED ROD

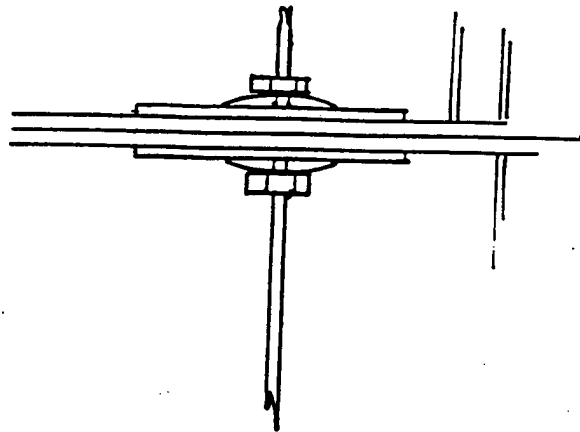
ROD ENDS COLOR CODED
TO MATCH COUPLING DEPTH



Nut
 Compression Washer
 Rounded Washer or Nut
 Backing Plate
 Double Plate
 Threaded Rod

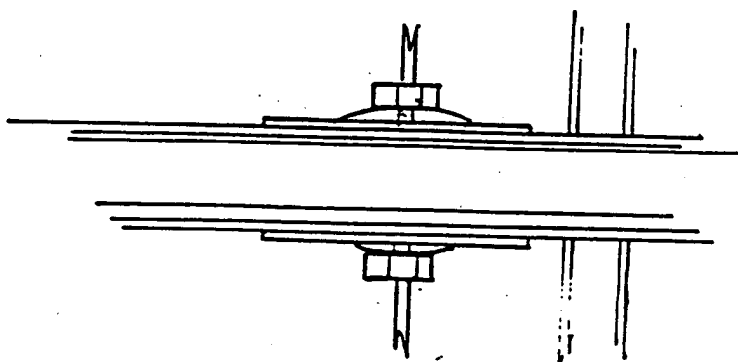


Nut
 Compression Washer
 Backing Plate
 Double Plates
 Backing Plate
 Compression Washer
 Nut



Threaded Rod

Nut
 Compression Washer
 Backing Plate
 Floor Joist-Mid Floor Cross-
 Section
 Backing Plate
 Compression Washer
 Nut



Coupling Nut

Tension Indicator

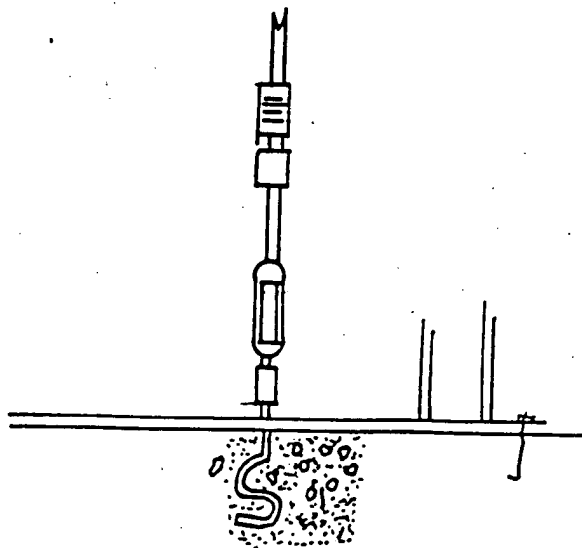
Turn Buckle

Coupling Nut

Mud Sill

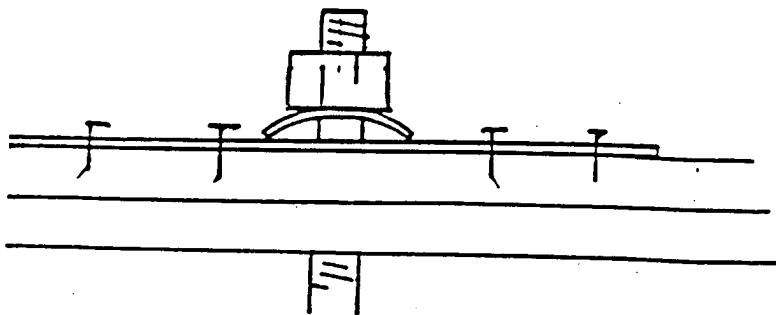
Anchor Bolt

Foundation



Nut
Compression Washer
Backing Plate

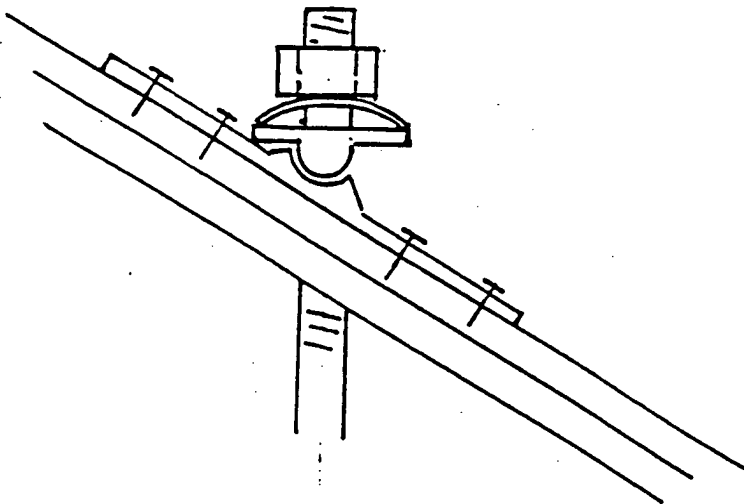
Threaded Rod



SLOPING TOP PLATE

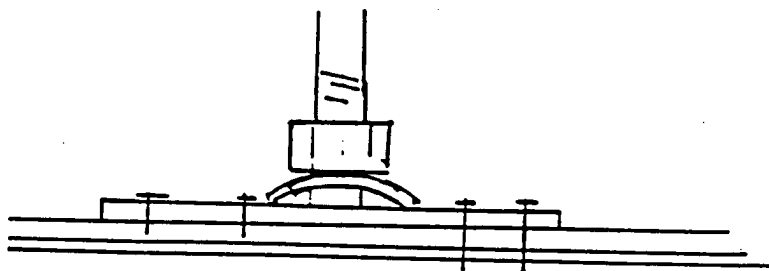
Nut
Compression Washer
Rounded Washer or Nut
Cup in Backing Plate

Threaded Rod

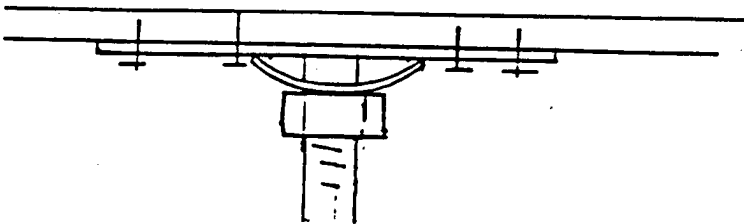


IID FLOOR CROSS SECTION

Nut
Compression Plate
Backing Plate



Backing Plate
Compression Washer
Nut



Threaded Rod

VISIBLE GAUGE

THREADED ROD

TURN BUCKLE

POSSIBLE VIEW VENT

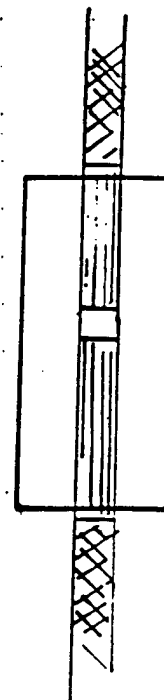
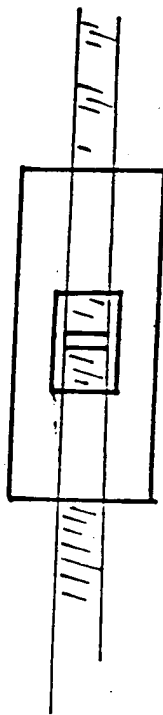


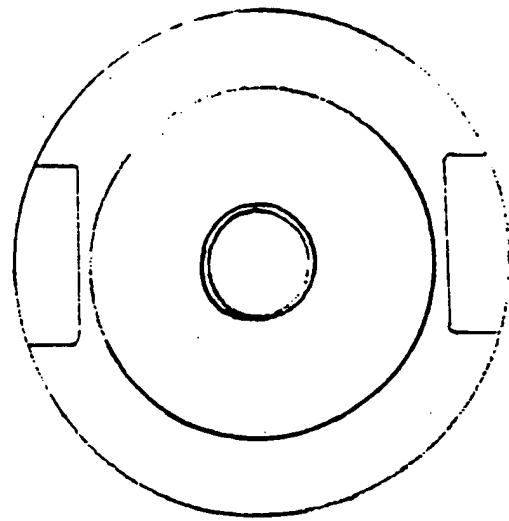
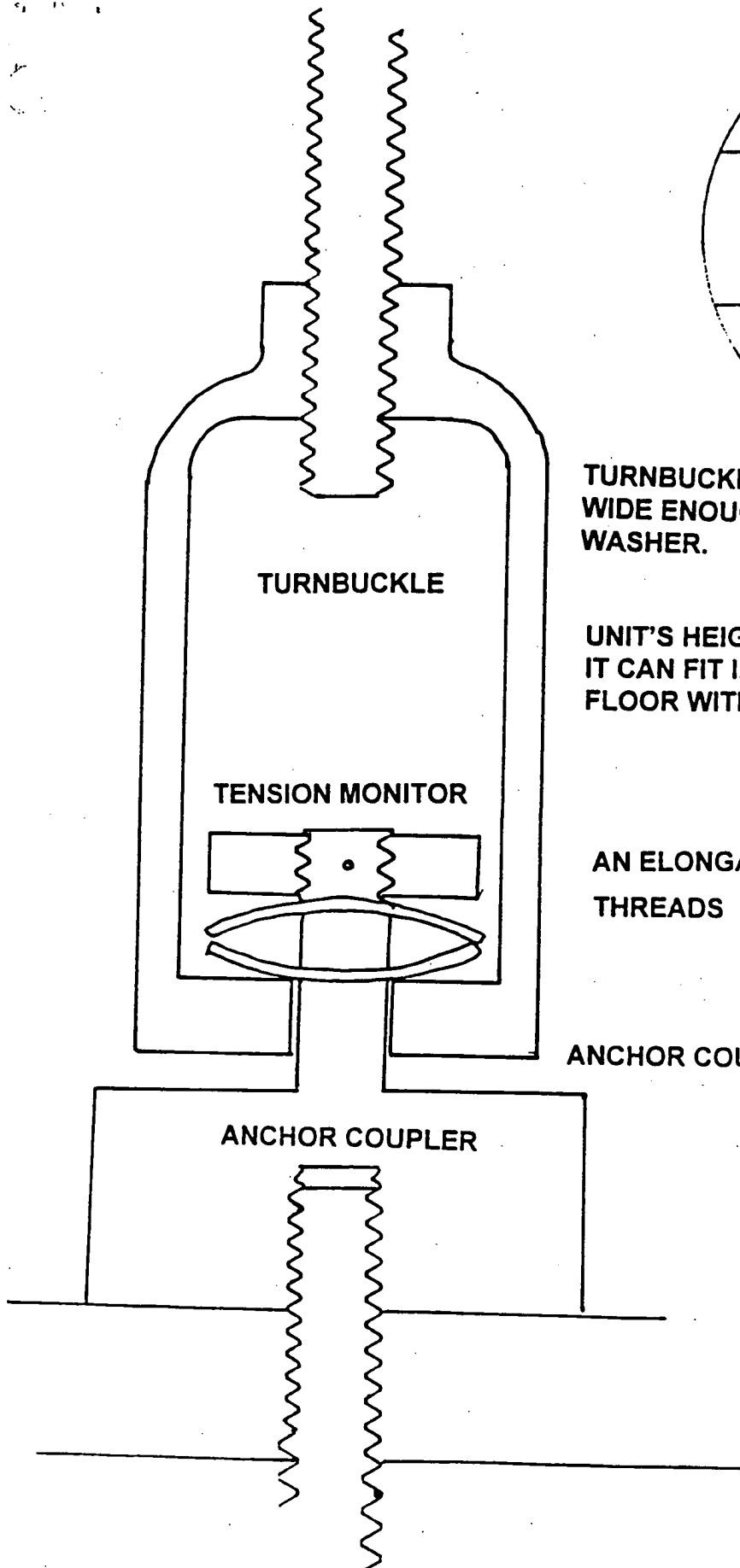
COUPLING

INSPECTION HOLE

THREADED ROD

ROD ENDS COLOR CODED
TO MATCH COUPLING DEPTH





TURNBUCKLE HOUSING EXTENSION ARMS MUST BE WIDE ENOUGH TO SEAT COLLAPSED COMPRESSION WASHER.

UNIT'S HEIGHT IS NOT TO EXCEED 7-1/2" SO THAT IT CAN FIT IN BETWEEN THE MUDSILL AND SUB FLOOR WITH A 2 X 8 JOIST.

AN ELONGATED ANCHOR NUT WITH LEFT-HAND THREADS IS A DESIGN OPTION.

ANCHOR COUPLER WITH HEXAGON SHAPED BASE

RAKE WALLS

**Nut
Compression Washer
Backing Plate**

BACKING PLACES WITH ROUNDED SEAT

STANDARD FRAMING

Coupling Nut

JOIST

STUDS & PLATE

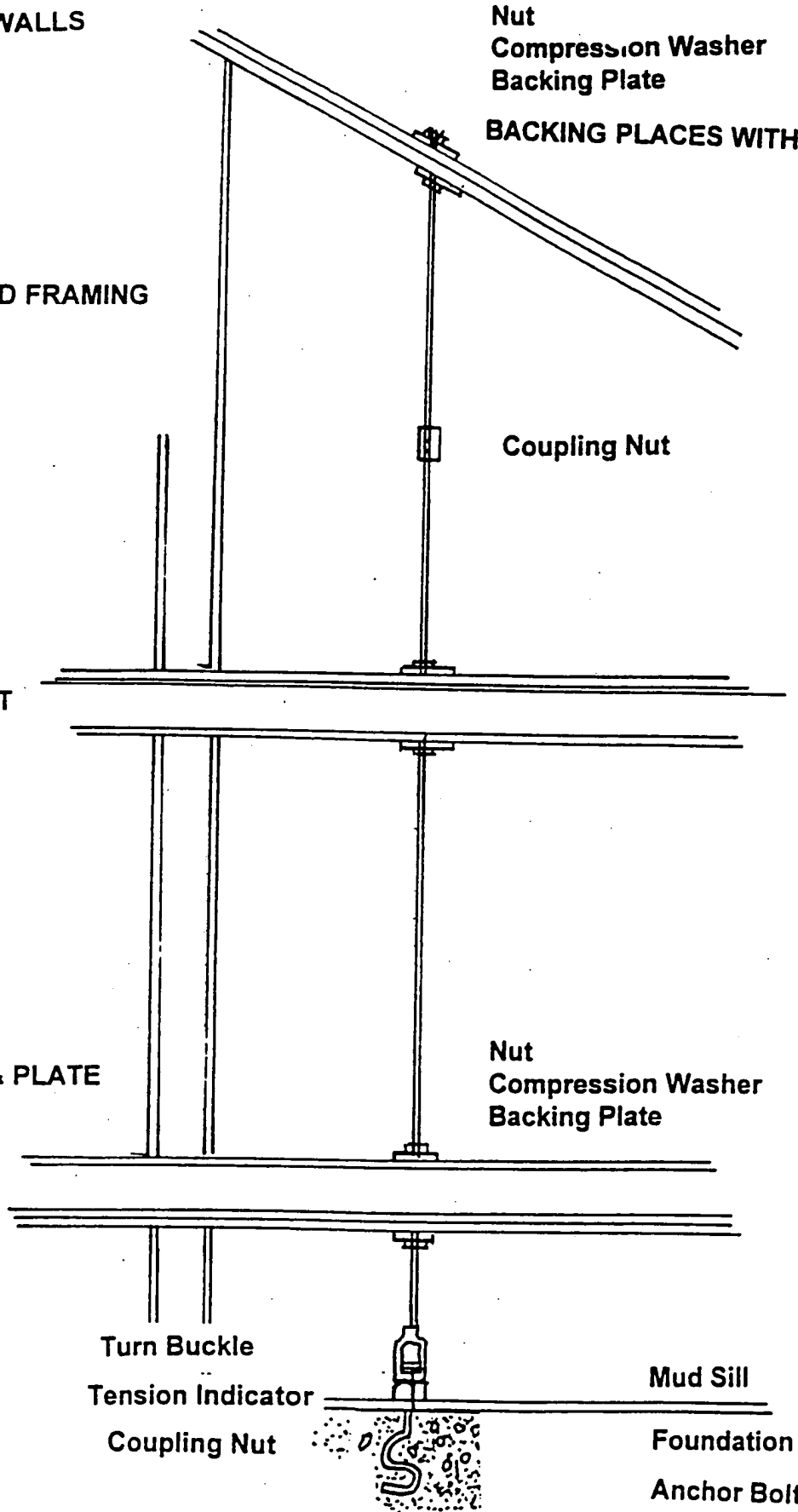
**Nut
Compression Washer
Backing Plate**

**Turn Buckle
Tension Indicator
Coupling Nut**

Mud Sill

Foundation

Anchor Bolt



DESIGN FEATURES

Couplers with a window in the center so as to allow monitoring of the threaded rod within the coupling.

Ends of the threaded rod will be color coded to an exact length to monitor the depth of its penetration into couplers or any other component.

Strength of the threaded rod material will be increased to allow a smaller diameter to be used - thus easier to handle.

Top backing plate is designed to allow a nut with a rounded base to be seated within a rounded pocket, thus allowing the base and nut to remain in contact while they are being used on a sloping angle.

The use of threaded rod continuously from the foundation to the top of the structure, one element, not a collection of assemblies.

Attaching points are at all horizontal members of the structure through the vertical height of the structure.

Backing plates narrower than 3-1/2" to accommodate off center holes.

Backing plates with one side smooth to allow an unobstructed surface for compression washers.

Backing plates wide enough to prevent uplifting forces from ripping lumber through plates.

Backing plate with nail holes that will simplify installation and prevent wood distortion in the event of horizontal movement.

Compression washers at all attaching points between nuts and backing plates prevent loosening of assemblies.

Compression washers to allow for predictable movement in the future.

Color coded compression washers to indicate their load values and their proper use with other assemblies of hardware.

Compression washer between the anchor bolt and turnbuckle.

Compression washers to allow for different rates of shrinkage at various contact points.

Compression washers with dual colors - one on the flat surfaces and a contrasting color on the edges to allow easier identification of distortion.

A combination of a turnbuckle, tension monitor, anchor bolt coupler as one unit.

Turnbuckle assembly not to exceed 4-1/2" in height so as to allow placement in a 2 x 6 joist space.

Turnbuckle anchor coupling to contain a hole so as to allow a nail to be used to prevent loosening.

Tension monitor will be comprised of compression washer color coded and tabbed ends so that movement will be exaggerated and easily noticed. Their placement will be between the anchor coupler and the turnbuckle assembly.

The nut at the top of the anchor bolt coupler has left hand threads, a smooth lower surface and an elongated shape so as to engage within the turnbuckle housing.

Removable vent screens will be placed next to the assembly for viewing the tension indicators and for tightening when desirable.

Placing of the assembly next to studs or other continuous vertical members so as to prevent downward forces from adversely affecting the unit.

Color code each incremental size unit to insure compatible performances through the whole assembly.

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